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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/866,287	05/25/2001	Eiji Yamakawa	15162/03680	4612

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SIDLEY AUSTIN BROWN & WOOD LLP
717 NORTH HARWOOD
SUITE 3400
DALLAS, TX 75201

EXAMINER

KUMAR, SRILAKSHMI K

ART UNIT PAPER NUMBER

2675

DATE MAILED: 10/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/866,287

Applicant(s)

YAMAKAWA ET AL.

Examiner

Srilakshmi K. Kumar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6,8-21 and 23-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6,8-21 and 23-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

The following office action is in response to Amendment B, filed September 2, 2004. Claims 1-6, 8-21, 23-32 are pending.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al (US 5,748,277) in view of Nomura et al (US 6,236,385).

As to independent claim 1, Huang et al disclose a method for driving a liquid crystal display by applying AC pulses to a liquid layer, which comprises liquid crystal which exhibits a cholesteric phase having a selective reflection characteristic, through a plurality of scan electrodes and a plurality of data electrodes which face and cross each other (matrix), in which the scan electrodes are selected for scanning successively at specified time intervals (Figs. 1, 2A and 2B, col.2, lines 55-62), said method comprising; a reset step of applying a reset pulse (the preparation step/phase shown by Huang), which is to reset liquid crystal of the liquid crystal layer to a predetermined state, to an area of the liquid crystal layer that corresponds to a selected one of the scan electrodes (col. 3, lines 42-46, col. 5, lines 58-63, col. 8, lines 8-25, 38-44); a selection step of applying a selection pulse, which is to select a final state of the liquid crystal, to the area of the liquid crystal layer after the reset step (col. 3, lines 47-54, col.9, lines 40-42); the liquid crystal display displaying an image by switching the liquid crystal between a focal conic

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state and a planar state (col. 3, lines 2-36); wherein a pulse applied to the selected one of the scan electrodes during the reset step has an amplitude which is larger than a maximum amplitude of pulses applied to each of the data electrodes and has a polarity maintaining period which is longer than that of the selection pulse so that the reset pulse has an alternating cycle which is longer than that of the selection pulse (col. 3, lines 42-46, col. 5, lines 58-63, col. 8, lines 8-25, 38-44).

Huang et al do not disclose wherein a polarity maintaining period is longer than that of the selection pulse so that the reset pulse has an alternating cycle which is longer than that of the selection pulse. Nomura et al disclose this feature in Figs. 9A and 9B, and in col. 15, lines 20-45. In Figs. 9A and 9B, the pulse in T1, the reset period, is shown to have a longer amplitude than the pulse of the selection periods that follow. It would have been obvious to one of ordinary skill in the art to incorporate the pulses of Nomura et al into that of Huang et al as the system of Nomura et al, in col. 2, lines 51-59, shortens the write time and prevents flickering of the display.

As to independent claim 9, limitations of claim 1, and further comprising, an evolution step of applying an evolution pulse, which is to select a final state of the liquid crystal to an area of the liquid crystal layer (col. 3, lines 55-65, col. 10, lines 7-20) and wherein a pulse applied to the selected one of the scan electrodes during the evolution step has an amplitude which is larger than a maximum amplitude of pulses applied to each of the data electrodes and has a polarity maintaining period which is longer than that of the selection pulse, so that the evolution pulse has an alternating cycle which is longer than that of the selection pulse (col. 10, lines 7-20); wherein a voltage applied to the data electrodes is lower than a voltage at which crosstalk occurs (col. 10, lines 20-45).

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As to independent claims 16 and 32, limitations of claims 1 and 9, and further comprising, wherein, Huang et al disclose a liquid crystal display device comprising; a plurality of scan electrodes and a plurality of data electrodes crossed over the scan electrodes (col. 5, lines 53-57); and a liquid crystal layer sandwiched between the scan electrodes and the data electrodes, said liquid crystal layer including liquid crystal (col. 2, lines 55-62); and a driver which is connected to the scan electrodes and to the data electrodes (col. 5, lines 13-16).

As to independent claims 24 and 31, see limitations of claims 1, 9 and 16, above.

As to dependent claims 2 and 3, see limitations of claim 9, above.

As to dependent claims 4, 19 and 26, limitations of claims 1, 16 and 24, and further comprising, wherein the polarity inversion cycle of the reset pulse is sufficiently long to prevent the liquid crystal from being polarized (col. 3, lines 42-46, col. 5, lines 58-63, col. 8, lines 8-25, 38-44).

As to dependent claims 5, 12, 20 and 27, limitations of claims 1, 9, 16 and 24, and further comprising, wherein the time intervals to select the scan electrodes successively are determined based on a time defined by the selection pulse (col.4, lines 28-33).

As to dependent claims 6, 13, 21 and 28, limitations of claims 1, 9, 16 and 24, and further comprising, wherein the maximum amplitude of the pulses applied to each of the data electrodes is lower than a threshold to change the state of the liquid crystal (col. 4, lines 20-28).

As to dependent claims 7, 14, 22 and 29, limitations of claims 1, 9, 16 and 24, and further comprising, wherein the liquid crystal exhibits a cholesteric phase having a selection reflective characteristic (col. 2, lines 55-62).

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As to dependent claims 8, 15, 23 and 30, limitations of claims 7, 14, 22 and 29 and further comprising, wherein the liquid crystal exhibits bistability between a planar state and a focal-conic state (col.3, line 55-col. 4, line 33).

As to dependent claim 10, see limitations of claim 1, above.

As to dependent claim 11, limitations of claim 9, and further comprising, wherein the polarity inversion cycle of the evolution pulse is sufficiently long to prevent the liquid crystal from being polarized (col. 10, lines 7-20).

As to dependent claims 17 and 25, limitations of claims 16 and 24, and further comprising, wherein the AC pulses further comprise an evolution pulse, which is to cause the liquid crystal to evolve to a selected final state, to the area of the liquid crystal layer during an evolution step that is subsequent to the selection step (col. 3, lines 55-65, col. 10, lines 7-20).

As to dependent claim 18, see limitations of claim 9, above.

Response to Arguments

3. Applicant's arguments filed September 2, 2004 have been fully considered but they are not persuasive.

With respect to applicant's arguments in regards to the combination of Huang with Nomura, Examiner, respectfully, disagrees. Huang discloses a display utilizing a chiral nematic or cholesteric, reflective bistable liquid crystal material and an electronics drive system for activating the display using efficient operation to provide high speed updating of the display. Nomura discloses a method of driving a liquid crystal display that uses a chiral nematic liquid crystal having two metastable states. In col. 3, lines 5-13, Nomura discloses using a chiral nematic liquid crystal as is used in Huang. Further, Nomura is disclosed in order to teach where

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in Figs. 9A and 9B, the pulse in T1, the reset period, is shown to have a longer amplitude than the pulse of the selection periods that follow. Further, the combination of Huang with Nomura is proper as Huang discloses where using chiral nematic materials cause the display to take longer to write the initial information to the display in col. 1, lines 43-55.

Huang discloses where the liquid crystal display displaying an image by switching the liquid crystal between a focal conic state and a planar state in col. 3, lines 2-36. Huang further discloses lower voltage applied to reduce crosstalk in col. 10, lines 20-45.

Thus the above rejection has been maintained.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Srilakshmi K. Kumar whose telephone number is 703 306 5575. The examiner can normally be reached on 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, xxxx xxxx can be reached on xxx xxx xxxx. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 305 4700.

Srilakshmi K. Kumar
Examiner
Art Unit 2675

SKK
September 29, 2004


DENNIS-DOON CHOW
PRIMARY EXAMINER